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Grasses for Special Purposes

Cooperative Extension South Dakota State University

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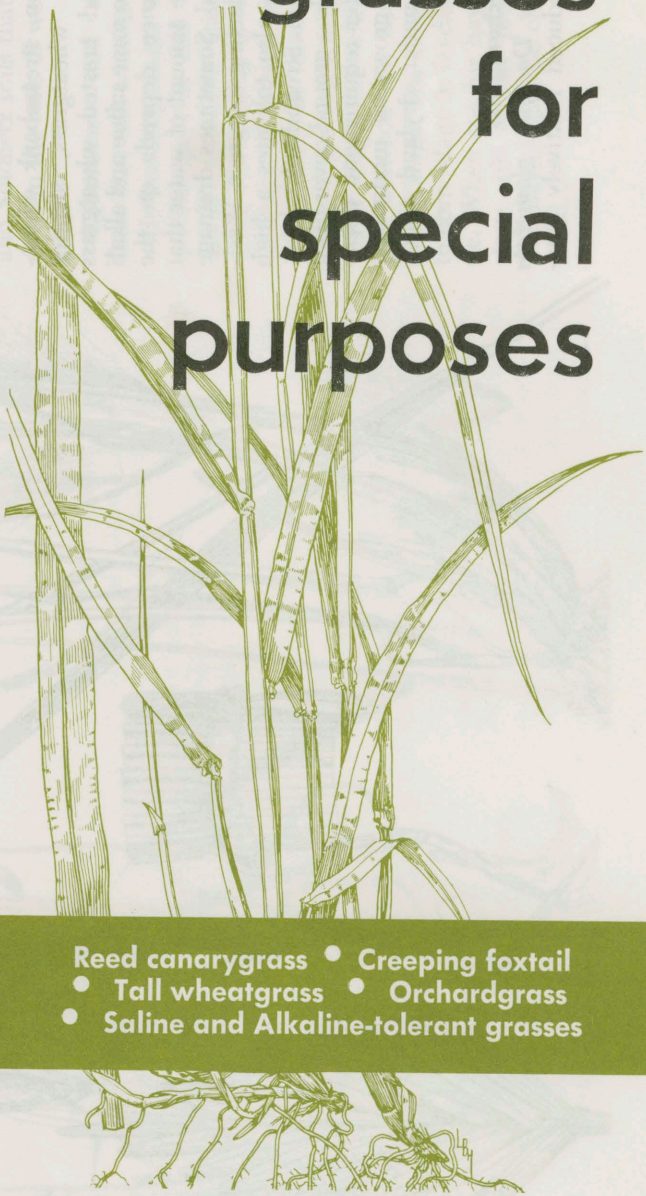
grasses for special purposes



Reed canarygrass • Creeping foxtail • Tall wheatgrass • Orchardgrass • Saline and Alkaline-tolerant grasses

Cooperative Extension Service
South Dakota State University
U. S. Department of Agriculture

Grasses for Special Purposes

Yield increases of up to 10% might be possible if unproductive areas in many eastern South Dakota pastures were planted to the right "special purpose" species of grasses.

Too often, the poorest yielding fields on the farm are used for pasture, resulting in low production. Many of these fields contain areas not adapted to common pasture grasses. These areas can become more productive if the right "special purpose" grass is used.

"Special purpose" grasses are discussed in this Fact Sheet. Grasses useful during certain seasons of the year are discussed in three other Fact Sheets: "Cool-season Grasses for Early Spring and Fall," "Cool-season Grasses for May and June," and "Warm-season Grasses for July and August."

Reed canarygrass and creeping foxtail, useful in low wet areas, are two of several "special purpose" grasses listed for South Dakota. Reed canarygrass also does well on upland sites. Tall wheatgrass tolerates saline and alkaline soils and should be used in those areas. They must be kept in a succulent state to be palatable.

Reed Canarygrass

Reed canarygrass, *Phalaris arundinacea* L., is a tall, coarse, sod-forming, cool-season perennial grass with strong rhizomes. It grows in clumps often 3 feet across and 7 to 8 feet tall. Leaves are flat, ¼ to ⅝ inch wide and 8 to 12 inches long. Seedheads are dense panicles 2 to 8 inches long that become whitish as seed matures.

Reed canarygrass is recommended primarily as a pasture or hay crop for low wet areas. However, in some cases, an entire pasture may be seeded. In such cases the same type forage in the pasture will result in fewer problems due to lower palatability of reed canarygrass. Graze after spring growth reaches 14 inches and when ground is firm enough to prevent damage to the grass from trampling. In some wet areas a crop of silage or hay may be cut before grazing begins, but the cutting should be made no later than the heading stage and a 4-inch stubble should be left. Proper management requires clipping at least once a year, fencing to confine cattle to fields of canarygrass and moderate use to prevent over-grazing and thinning of stands.

Reed canarygrass grows best in fertile moist or wet soils and is a top grass for muck and peat swamplands. It is adapted and makes excellent growth on upland soils that are frequently dry for long periods in summer. It is winter-hardy and grows most rapidly during the cool spring months. However, it continues to grow more rapidly during mid-summer than most other cool-season grasses.

Its long life, long grazing season, and large yields of nutritious forage make it a valuable pasture plant, however, it will not survive under continuous close grazing. Protein content may vary from 6% to 25%, but is generally between 10% and 14%. Increased protein digestibility has been observed as nitrogen fertilization levels are increased. Beef cattle gains on reed canarygrass pasture are good although the grass is only moderately palatable. More beef per acre was produced from reed canarygrass than from smooth bromegrass in a 1964 Minnesota test.

Early cutting of the hay crop improves quality; otherwise it may be somewhat coarse. It is most palatable and nutritious if harvested at the time the panicles have emerged from the boot, and if sufficient nitrogen has been applied. Where ample moisture and fertility are available, two cuttings a season are possible. Yields of 3 to 4 tons per acre are not uncommon.

Reed canarygrass is relatively drought-tolerant when grown on upland soil. However, on upland soil it becomes sod-bound and relatively unproductive within a few years unless heavily fertilized. In Iowa, reed canarygrass was reportedly more productive on upland and more drought-resistant than bromegrass, orchardgrass, and several other grass species. During a severe drought it yielded almost twice as much forage as any other grass. In South Dakota smooth bromegrass and intermediate wheatgrass always produce more palatable forage and generally produce higher yields on upland.

In general, seeding a legume with reed canarygrass has not been successful, due to the shading effect of the leafy, tall-growing grass. Alfalfa and birdsfoot trefoil have been grown successfully in association with the grass on soils where the legumes are adapted and when grazing management favored the legume.

Varieties recommended for South Dakota are Frontier, developed in Ontario, and Ioreed, developed in Iowa. Average yields at Brookings were 4.1 tons per acre from Ioreed, **and 5.1 tons from Frontier. Seed of both varieties is in short supply. Castor, developed in British Columbia, and Rise, developed by Rudy-Patrick, are new varieties that appear promising. However, in limited South Dakota tests neither has produced more forage that a commercial lot of seed.**

Creeping Foxtail

Creeping foxtail, *Alopecurus arundinaceus* Poir., is an introduced, sod-forming, cool-season perennial grass

Reed canarygrass. Plant (shown on cover) X ⅖; leaf and seed head X ⅔; ligule X 5¼; seed X 10.

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with a rhizomatous root system. Flowering stems are usually about 3 feet tall, but may reach a height of 6 feet. Leaves are dark green, medium broad, and numerous. The seed heads are cylindrical panicles, similar to timothy, that tend to shatter when ripe. Seeds are usually light colored, but may be brown or black. They are enclosed in a light fluffy membraneous covering. The rootstocks are short (2 to 4 inches) and are comparatively few, as are the underground branches. The individual plants are generally in loose tufts. However, old heavy stands will produce medium dense sods.

Creeping foxtail is recommended for use as hay or pasture in low wet areas much the same as reed canarygrass. Creeping foxtail will withstand flooding, but not as much as reed canarygrass.

It resembles common meadow foxtail, but spreads more rapidly and has broader leaves. It has an indeterminant blooming habit and seeds shatter within a few hours after maturity.

Creeping foxtail begins growth in early spring. Flowering stems vary with climatic conditions. In places where winters and early springs are mild, a succession of flowering stems are produced from late in the winter to early summer. Creeping foxtail has weak seedlings that develop slowly. Firm, moist seedbeds and special care in planting are required. Seeding is done as early in the spring as good seedbeds can be prepared. Because the seed is light and fluffy and has hairy appendages, it is difficult to plant.

Cool, moist climates are conducive to best growth of creeping foxtail. It is not sensitive to heat or cold. Soil moisture is the limiting factor during periods of high temperatures, and usually growth is checked at these times. It responds to relatively high rates of nitrogen fertilizer.

Creeping foxtail. Plant and seed head X ⅔; other parts X 6½

Creeping foxtail, naturally a wet- or moist-land grass, grows best on fertile or swampy soils. It is somewhat tolerant to saline soils, but that tolerance depends largely on soil moisture. It is adapted to irrigated pastures when seeded alone or in mixtures with other grasses and legumes.

Creeping foxtail is primarily a pasture grass. It is long-lived, winter-hardy, succulent, palatable to all livestock, and has a long grazing season, and livestock make good gains.

Garrison is the variety recommended for use in South Dakota. It is adapted to wetlands and produces good yields of apparently good quality forage early in the season. Average yield at Brookings is 3.1 tons per acre. It is less productive, but appears to be more palatable than reed canarygrass.

Tall Wheatgrass

Tall wheatgrass, *Agropyron elongatum* (Host) Beauv., is an introduced, tall, late-maturing, vigorous, stemmy bunchgrass with coarse, long, blue-green leaves and large seeds. It commonly grows to a height of 5 to 7 feet. The leaves are from 6 to 12 inches long and ⅛ to ½ inch wide.

Tall wheatgrass is a special-purpose grass recommended for use in alkaline areas where other species do not produce well. Spring grazing can begin when the ground is firm and there is at least 10 inches of new growth above the 6-inch stubble.

Tall wheatgrass is especially tolerant of saline and alkaline soils. High yields of forage are obtained on irrigated or subirrigated saline soils and on imperfectly drained alkali soils. It is specifically adapted to Solonchak and Solonetz soils that occur as inclusions in the soils of western South Dakota.

Laboratory and digestion trials show that tall wheatgrass, even at the early-heading stage, is higher in digestible protein and TDN (total digestible nutrients) than crested wheatgrass. Palatability is higher at younger stages of growth and sometimes it is necessary to mow rank growth in order to get cattle to graze it.

For silage, tall wheatgrass is chopped between the heading and soft-dough stage. The silage is nearly equal to corn silage in feeding value for cattle. When cut for hay at the heading stage, 10% to 12% protein is present. The hay should be chopped before it is fed.

Beef cattle have gained 100 to 800 pounds per acre on tall wheatgrass pasture. The carrying capacity and gains vary with location, soil, growing season, available moisture, fertilization and grazing management. Sheep with lambs make good use of tall wheatgrass. The leaves are stripped from the stems, which are seldom eaten. Lambs marketed from tall wheatgrass pasture are equal in weight and quality to those pastured on other grasses. It is a late-maturing species and provides good pasture when other cool-season grasses are dormant during August.

Tall wheatgrass is used in wildlife plantings where its tall persistent, bunchy growth provides nesting sites and cover for upland game birds. On wildlife plantings interrupted drill strips alternated with lower growing species provide excellent cover and good hunting. It also serves as good wind barriers when planted in 2- to 4-row strips at intervals across fallow, winter wheat, or grazing land. The barriers reduce wind velocity which decreases wind erosion and increases snow retention.

Some strains have green, bluish, or blue-green foliage. The blue color is intensified under droughty or strongly alkaline conditions. Most strains of tall wheatgrass are very similar and give satisfactory performance. Alkar and Largo are the most common varieties. Forage yields vary from 2 T/A at Presho to 2.9 T/A at Brookings for Alkar and from 0.7 T/A at Cottonwood to 2 T/A at Eureka for Largo.

Other Saline and Alkali Tolerant Grasses

Alkali sacaton, streambank wheatgrass, western wheatgrass, slender wheatgrass, and crested wheatgrass can be grown on some saline and alkali soils. Performance depends on the salts and on the amount of water that can be supplied. Sometimes drainage is a factor in selecting the grass. Western wheatgrass also tolerates a high salt concentration. Streambank wheatgrass is primarily a ground-cover plant with a low water requirement. Crested wheatgrass grows on moderately alkaline soils under dryland conditions.

Orchardgrass

Orchardgrass, *Dactylis glomerata* L., is an introduced relatively long-lived, cool-season, perennial bunchgrass. It has a few jointed flowering stems that grow to a height of 2 to 4 feet. Most of the foliage is produced by basal leaves. It grows in large contiguous masses and has folded leaf blades and compressed sheaths. This tussock-forming habit is lessened somewhat by careful grazing management and by seeding with alfalfa. It does not produce stolons or underground rhizomes and, therefore, never forms a dense sod. The peculiar cluster formation of the inflorescence is characteristic.

In South Dakota, which is outside its main area of adaptation, orchardgrass is a high-risk crop. Its use is not encouraged except for irrigated and sub-irrigated regions, areas with high water table and in certain places in the Black Hills.

In areas where it is adapted, it starts growth early in the spring, develops extremely rapidly, and matures earlier than smooth bromegrass. It recovers rapidly after grazing or mowing and, as a result, produces throughout the growing season. Orchardgrass produces a smaller first crop than bromegrass, but outyields it during mid-summer because of ability to do well during the drier, warmer part of the season.

Orchardgrass flourishes on rich soil, but it also succeeds on light soil of medium fertility and on moist, heavy land. It is one of the best cultivated grasses for shade. It is quite cold-resistant and continues growth until the first severe frosts. However, it is less winter hardy than several other grass species. Orchardgrass will tolerate more heat than smooth bromegrass and surpasses

Tall wheatgrass. Plant and seed head X ⅔; ligule and spikelet X 4⅓; seed X 2½.

most cool-season grasses in summer production of leafy pasturage.

Livestock graze orchardgrass early in the spring. Because growth starts early, animals must be turned on before seed heads form. It matures earlier than smooth bromegrass.

Growth characteristics of orchardgrass are typical of many non-jointed grasses and adapt it to continuous grazing type management. Unlike grasses with jointed stems, only 5% to 10% of the stems bear seed heads. Forage producing stems are short. Forage production comes from continued leaf growth at the junction of the leaf blade and sheath. Continued removal of leaves by grazing or mowing stimulates rapid regrowth of leaves and maximum forage production. Deferred grazing permits the sheath to grow too high, thereby raising the collar (junction of leaf blade and sheath) to a vulnerable position. Removal of the collar results in dormancy because the source for regrowth is gone. Continuous, moderate grazing, started early, keeps the collar low; regrowth is rapid; and maximum forage production is obtained.

Boone, Napier, Potomac and Sterling each produced a 3-year average yield of 4.75 T/A under irrigation at Brookings, while Dayton, Frode, Hallmark, Nordstern and Tardus each produced 4.5 to 4.6 T/A.

ACKNOWLEDGMENT

The authors have drawn freely from the USDA Yearbook "Grasses" and the SCS Agriculture Handbook No. 339 "Grasses and Legumes for Soil Conservation in the Pacific Northwest and Great Basin States." The line drawings were taken from SCS Agr. Handbook 339 and SCS-TP-151 "Key to Perennial Grasses." All production data, however, were obtained in South Dakota, except where otherwise specified.

Orchardgrass. Plant X ⅔; ligule X 4¾; other parts X 7¾.

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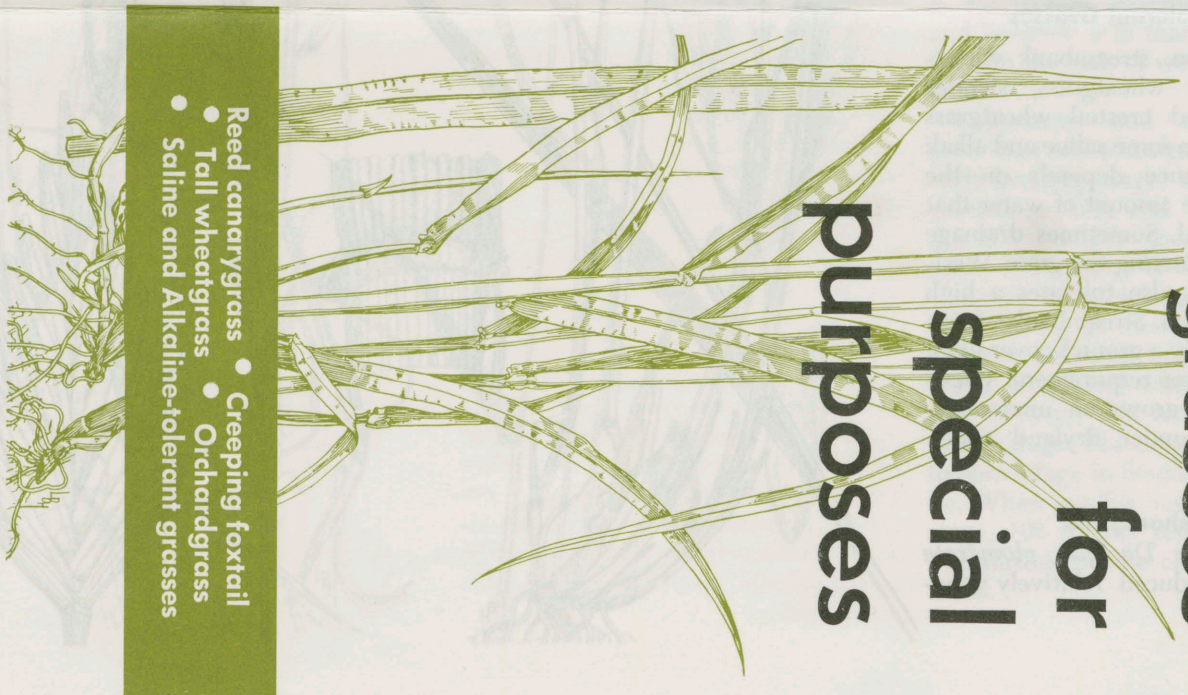

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